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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/328,673 02/13/95 GREGORY R PCJ1192

18M1/0416

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ART UNIT	PAPER NUMBER
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1805

DATE MAILED:

04/16/96

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/328,673

Applicant(s)
Gregory et al.

Examiner
Bonnie Weiss

Group Art Unit
1805



☒ Responsive to communication(s) filed on Oct 25, 1994

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-31 is/are pending in the application.

Of the above, claim(s) 16-31 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-15 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 7

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Part II DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I. Claims 1-15, drawn to recombinant adenoviral vectors, classified in Class 435, subclass 320.1.

Group II. Claims 16-31, drawn to methods of treating cancer, classified in Class 424, subclass 93.2.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (M.P.E.P. § 806.05(h)). In the instant case, recombinant adenoviral vectors can be used for the construction of viral particles that may be used to deliver genes to a wide variety of host cells, including cell lines (ie., in vitro uses), and may also be used as vaccines or immunogens.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by

Serial Number: 08/328,673
Art Unit: 1805

-3-

their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Paul Steinhardt on 02/26/96, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in responding to this Office action. Claims 16-31 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h).

6. The present status of parent applications cited in the specification is not correct. The two parent applications are now abandoned. Please amend the specification accordingly.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-5, 7, 8, 10 and 12-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by Haj-Ahmad and Graham (J. Virol., 1986, 57(1): 267-274).

Claims 1-5 and 7 are directed to a recombinant adenoviral vector comprising a partial or total deletion of protein IX DNA and a foreign gene (Claim 1), wherein the deletion in protein IX extends "about 4000 bp" from the 5' terminus (Claim 2), further comprising a deletion in E3 and/or E4 (Claim 3) and/or deletion of E1a and E1b (Claims 4 and 5), wherein the adenovirus is a Group C adenovirus, serotypes 1, 2, 5 or 6 (Claim 7).

Haj-Ahmad and Graham teach a recombinant adenoviral Ad5 vector containing a deletion of most of E3 and a deletion of all of E1 (see abstract), which includes half the gene for Protein IX (page 270, column 2, line 15) extending from nucleotide 354 to 3827 (discussion, paragraph 2). This vector is clearly anticipatory of the vector defined by Claims 1-5 and 7. Claim 2 is currently drawn to a deletion extending to "about 4000" (see rejections under 35 U.S.C. 112, second paragraph). The deletion described by Haj-Ahmad and Graham extends to 3827 as described

above. A position of 3827 is "about 4000" and therefore anticipates Claim 2.

Claims 8, 10 and 12-14 of the instant invention are drawn to the vector of Claim 1 wherein the gene is of a size of "up to 2.6 kb" (Claim 8), wherein the gene encodes a functional protein or fragment (Claim 10) or a suicide protein or fragment thereof (Claim 12), and a transformed host cell containing the vector of Claims 1 or 10 (Claims 13 and 14).

The vector described by Haj-Ahmad and Graham can accept up to 7.5 kb (see the abstract). The range taught in Claim 8 is clearly envisaged in that taught in the reference. The vector described by Haj-Ahmad and Graham also contains a foreign gene, HSV-1 thymidine kinase, which results in the conditional suicide of transformed cells, and the transformation of the vector into human and mouse cell lines (abstract). Thus, the teachings of Haj-Ahmad and Graham anticipate Claims 10 and 12-14 of the instant invention.

9. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

10. Claims 6 and 9 are rejected under 35 U.S.C. § 103 as being unpatentable over Haj-Ahmad and Graham in view of the enclosed pages from the text *From Genes to Clones* (Winnacker, 1987, VCH Publishers, New York, pp. 342-343). Claim 6 is drawn to the vector of claim 4 or 5 as described above, further comprising a deletion of "up to forty nucleotides positioned 3' to the E1 and protein IX deletion" and a foreign DNA molecule encoding a polyadenylation signal. Haj-Ahmad and Graham teach a vector as described above containing a deletion 3' to the E1/pIX deletion, but do not teach a vector containing a polyadenylation signal.

The vector described by Haj-Ahmad and Graham contains a deletion in the E3 region encompassing map coordinates 78.5 to 84.7. For adenoviral genomes, 1 map coordinate is equal to approximately 350 base pairs. The E3 region is 3' to the E1 region and protein IX. The deletion described in Claim 6 of the instant invention is clearly envisaged by that of the reference.

Without any reasons in the specification as to why the "3' deletion" cannot be larger than 40 nucleotides, a deletion of up to 2170 nucleotides is obvious to do in light of the teachings of Haj-Ahmad and Graham.

Although Haj-Ahmad and Graham do not specifically indicate that the tk gene cloned into their vector contained a polyadenylation signal, the vector can accommodate up to 7.5 kb as described above. It would have been obvious to one having ordinary skill in the art at the time the invention was made to insert a foreign gene containing a polyadenylation signal since (i) it was known in the art that such a modification is essential for the generation of functional mRNA (see From Genes to Clones), and (ii) the accommodation limit of 7.5 kb easily allows for such a modification.

11. Claims 11 and 15 are rejected under 35 U.S.C. § 103 as being unpatentable over Haj-Ahmad and Graham in view of Bacchetti and Graham (Information Disclosure Statement, 12/7/95). Claim 11 is drawn to the vector of Claim 1 containing a gene encoding a foreign functional protein as described in Claim 10, wherein the protein is a tumor suppressor protein. Claim 15 is drawn to a method of transforming a pathologic hyperproliferative mammalian cell with the vector of Claim 1.

Haj-Ahmad and Graham teach a vector with the limitations of Claims 1 and 10 as discussed previously. Haj-Ahmad and Graham do

not teach the use of a vector containing a tumor suppressor gene, nor the use of such a vector to transform a pathologic hyperproliferative mammalian cell. Bacchetti and Graham teach the use of an adenovirus vector expressing the tumor suppressor protein P53 to inhibit cell proliferation of an ovarian carcinoma cell line (see the abstract). It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use the vector taught by Haj-Ahmad and Graham to deliver the p53 gene as taught by Bacchetti and Graham for the purpose of suppressing the cancerous phenotype of a carcinoma.

12. Claim 6 is objected to under 37 C.F.R. § 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiply dependent claim. See M.P.E.P. § 608.01(n).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bonnie Weiss whose telephone number is (703) 305-6775. The Examiner is available Monday through Thursday and every other Friday, from 8:00 to 5:30. Any inquiry of a general nature or relating to the

Serial Number: 08/328,673
Art Unit: 1805

-9-

status of this application should be directed to the Group
receptionist whose telephone number is (703) 308-0196.



JOHN L. LeGUYADER
PATENT EXAMINER
GROUP 1800

Bonnie D. Weiss, Ph.D.

April 16, 1996